Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A method for forming a superconducting magnesium diboride (MgB2) thin film, the method comprising:

forming a boron thin film on a monocrystalline sapphire substrate or a monocrystalline strontium titanate substrate by pulsed laser deposition, sputtering deposition, electron beam evaporation, metalorganic chemical vapor deposition, or chemical vapor deposition;

thermally processing the substrate on which the boron thin film is formed along with a magnesium source and cooling the resulting structure, the substrate having the boron thin film and the magnesium source being double sealed with a container made of tantalum or niobium on the inside and a container made of quartz on the outside;

placing the substrate with the boron thin film and the magnesium source in a heat source having a temperature equal to or greater than 600°C and less than 950°C; and

rapidly heating the substrate with the boron thin film and the magnesium source for 10-60 minutes, and then cooling the substrate, wherein both ends of the container made of tantalum or niobium are sealed in an inert gas atmosphere, and both ends of the container made of quartz are sealed in a vacuum.

2. (New) A method for forming a superconducting magnesium diboride (MgB_2) thin film, the method comprising the steps of:

forming a boron thin film on a monocrystalline sapphire substrate or a

monocrystalline strontium titanate substrate by pulsed laser deposition, sputtering deposition, electron beam evaporation, metallorganic chemical vapor deposition, or chemical vapor deposition;

placing the substrate with the boron thin film and the magnesium source in a heat source generating a temperature equal to or greater than 600°C and less than 1000°C; and

heating the substrate with the boron thin film and the magnesium source for 10-60 minutes, and then cooling the substrate,

wherein the substrate with the boron thin film and the magnesium source are contained in a container made of tantalum or niobium, and

wherein the container made of tantalum or niobium is contained in a container made of quartz.

3. (New) The method of claim 2, wherein the inside of the container made of tantalum or niobium is filled with an inert gas.

4. (New) The method of claim 2, wherein the container made of tantalum or niobium is sealed in an inert gas atmosphere.

5. (New) The method of claim 3, wherein a boron thin film is formed on a monocrystalline sapphire substrate or a monocrystalline strontium titanate substrate by pulsed laser deposition.

6. (New) The method of claim 4, wherein a boron thin film is formed on a monocrystalline sapphire substrate or a monocrystalline strontium titanate substrate by pulsed laser deposition.

7. (New) The method of claim 3, wherein the inside of the container made of quartz is in a vacuum state.

8. (New) The method of claim 4, wherein the inside of the container made of quartz is in a vacuum state.